LUKAS, NACE,
GUTIERREZ & SACHS, LLP

8300 GREENSBORO DRIVE, SUITE 1200
MCLEAN, VIRGINIA 22102
703 584 8678 • 703 584 8696 FAX

WWW.FCCLAW.COM

Writer's Direct Dial
(703) 584-8660
rlukas@fcclaw.com

February 6, 2012

VIA EMAIL & ECFS

Moslem Sawez
Wireless Telecommunications Bureau
Federal Communications Commission
443 12th Street, S.W.
Washington, D.C. 20554

Re: WT DOCKET NO. 10-4

Dear Mr. Sawez:

My client, Wilson Electronics, Inc. ("Wilson"), has authorized me to provide the following information in response to the six questions you posed pertaining to whether the signal delay introduced by Wilson's signal boosters could affect E911 location accuracy.

1. What is the duration of the signal delay introduced by currently-manufactured signal boosters?

When an omni-directional outside antenna is used all Location Measurement Units (LMUs) see the same delay and the delay effectively cancels out. 100% of Wilson mobile signal boosters are sold with an omni-directional outside antenna. Additionally, Wilson boosters actually increase public safety by boosting the signal, thereby reaching more LMUs (for E911 location) and base stations (for completing emergency calls). Therefore, delay causes no location accuracy degradation. To the contrary, Wilson boosters improve location accuracy.

2. Is the delay taken into consideration in the design phase of the signal booster?

Wilson always attempts to design boosters with minimum distortion and group delay. Since 100% of Wilson's mobile boosters have omni-directional antennas, which do not cause location accuracy problems due to delay, Wilson is not overly concerned with delay beyond what good design practices dictate.

3. If so, are there specific goals for minimum delay and maximum delay?

See response to question 2.

4. What specifically causes the delay?

The delay in signal boosters is caused almost exclusively by the RF filters. These filters are necessary so that the signal booster transmits only on the allowed frequency bands. Filters are made up of capacitors and inductors, which store (delay) signal energy. The more filtering is required, the more delay results, because there are effectively more capacitors and inductors being used. Higher gain signal boosters require higher levels of filtering, therefore producing higher delay. Channelized (narrowband) signal boosters require very sharp filter edges therefore they have even higher delay. Almost all of Wilson's boosters are wideband, which decreases delay versus channelized designs.

5. A Location Measurement Unit (LMU) at the cell site may select the signal booster signal, which has a built-in delay instead of the mobile phone signal, therefore causing a location inaccuracy. Can signal boosters use digital watermarking, i.e., signals that can be identified at the LMU as those of a signal booster, to prevent their signal from being used for location measurements?

In fact, in the vast majority of situations the LMU will select the booster signal, which will improve E911 location accuracy as explained in response to question 1. Watermarking is an unnecessary complication for signal boosters, which will add cost to the boosters and require every LMU to be modified so it will be able to recognize the water mark. In addition, it will reduce the location accuracy and reliability of E-911. Remember the booster signal is precisely the signal the LMU's should select for improved location accuracy and reliability.

6. What are the pros and cons of digital watermarking?

Wilson sees no pros to watermarking, since it will increase the cost of both the booster and the cellular network to no good effect. In addition, watermarking will degrade location accuracy.

A copy of this letter is being filed electronically in WT Docket No. 10-4.

Should you have any questions with regard to this matter, or if additional information is deemed necessary, please contact me.

Very truly yours,

Russell D. Lukas